110 0.00

110
Packaging
Packaging
Memo
0.00

Packaging

MO 12/3/15

Dart Aerospace Ltd

-air Aci	Sopuce								~
W/O:			٧	VORK ORDER CHAI	NGES		•		,
DATE	STEP	PRO	PROCEDURE CHANGE					Approval Chief Eng / Prod Mgr	Approval QC Inspector
			,						
	,								
			·						
Part No	•	PAR #:	Fault Ca	tegory:	NCR: Yes	No DQ	4:	Date:	
	Re	esolution:	Disposit	ion:	QA: N/C C	losed:		Date: _	
NCR:		V	VORK OR	DER NON-CONFOR	MANCE (NC	₹)			
DATE	STEP	Description of NC		Corrective Action Section B			ation	Approval	Approval
DAIE	SIEP	Section A	Initial Chief Eng	Action Description Chief Eng	on Sign Date		on C	Chief Eng	QC Inspector
			4						
									·
									·
									_
						·			
				.,					

Work Ord February-06-12				*798	342*						Page 2
Item ID: Revision ID:	D407-667-10			Accept	*N900	040	100)* s	Setup Start Stop	*N	S1*
Item Name: Start Date: Required Date Reference:	Crosstube Fwo 06/02/2012 : 20/02/2012	Start Qty: 1.00 Req'd Qty: 1.00	*1* *1*		Cust Item Customer:	ID:			Зюр	*N	S2*
Approvals:	Process Pla	n:	Date:	Tooling: SPC (Y/N):		ate:		F	Run Start Stop	*N *N	R1* R2*
Sequence ID/ Work Center I	D	Operation Description		Set Up/ Run Hours	Tool ID	Tool#	Plan Code	Accept Qty		Reject Number	Insp. Stamp
120 CNC Bend 2 CNC Alpha 160 Be	nder	BENDING MACHINE - Memo Bend tube as		0.00 using CNC bender progra	m 407-fw		W	KM	12:	3-	15
130		QC15- Crosstube Dimens	sional Check	0.00							
130		Memo		0.00	13/15			(70_			

Quality Control

Dart Aerospace Lt

Dail Aci	oopaoo									
W/O:			WC	RK ORDER CHANG	GES					
DATE	STEP	PRO	CEDURE CHA	NGE		Ву	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
. 4										
						·				
							;			
Part No		PAR #:	Fault Cate	gory:	NCR	: Yes N	lo DQ	A:	Date:	
	Re	esolution:	Dispositio	າ:	QA:	N/C Clo	sed:	•	Date: _	
NCR:		\	WORK ORDI	ER NON-CONFORM	IANCE	(NCR)	,			
DATE	STEP	Description of NC			ction B	Sign &	Verific		Approval	Approval
DATE	SIEF	Section A	Initial Chief Eng	Action Description Chief Eng		Date	Secti	on C	Chief Eng	QC Inspector
,				•					,	
,										
		rig.				•				
•										
· · · · · · · · · · · · · · · · · · ·										·
									·	

79842

Page 3

Revision ID:	D407-667-10 Crosstube Fwo			Accept	*N90	<u>00401</u>	೧ ೧*	Setup Sta	ı VI.	S1* S2*
Start Date: Required Date: Reference:	06/02/2012 20/02/2012	Start Qty: 1.00 Req'd Qty: 1.00	*1 *1	7	Cust Iter Custome				, Tu	
Approvals:	Process Pla	n:	Date:	Tooling:		Date:		Run Sta	"	R1*
	QC:	·	Date:	SPC (Y/N):		Date:		Sto	*NI	R2*
Sequence ID/ Work Center ID		Operation Description		Set Up/ Run Hours	Tool ID		an Accep ode Qty	t Reject Qty	Reject Number	Insp. Stamp
140		Crosstubes		0.00						
Crosstubes Crosstubes		Memo 1- scrib bate	h # inside of cuff	0.00			·			
		667-145. Di towers, as pe 3-Drill and F DT8542 as p sides.	rill all (3) top holes u er QS10010. Ream all holes in tub eer Dwg D407-667-1	drill Jig DT8541 & DT8542 as puse drill table jig DT8577 hole # e to finish size using drill Jig DT 45 Check dimensions between b	,#11 to set up 8541 & oles on all four					
Salar Control of the		off existing l 5-Drill pilot	noles using "T" pins.	gs from right to left, left to right. DT8541 & DT8542 as per Dwg		} Tu		12-	3-15	
			m the top (2) holes to 0407-667-145	o finish size using drill Jig DT8	641 & DT8542					
			rivet holes using drill vd side has 3x top ho	I Jig DT8787FWD as per Dwg D bles.	206-667-)				
		8-Drill Aft ri	vet holes using drill .	Jig DT8787AFT as per Dwg D4	07-667-145.					
		9-C'sink hole compensate f		667-145. Allow rivet to sit below	w surface to	/			ن.	
	••	10 -Deburr &	Inspect for surface	damage. Repair damage within	limits as per	>		/VII	1	3-16

				VODI/ 07777	NIANOES.					,
W/O:	ŀ		V	VORK ORDER C	CHANGES			,		,
DATE	STEP	PRO	PROCEDURE CHANGE					Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
			:					,dngmg, + Ĉ	,	
Part No	:	PAR #:	Fault Ca	tegory:	NC	R: Yes N	lo DQA :	·	Date:	
	Re	esolution:							Date:	
NCR:			WORK OR	DER NON-CON		(NCR)				
		Description of NC		Corrective Action			 Verifica	tion	Approval	Approval
DATE	STEP	Section A	Initial Chief Eng	Action Desc Chief Er	eription ^{ng}	Sign & Date	Section		Chief Eng	QC Inspector
					<i>ేసిం</i>					
•					• .				· ,	
	1									
	·									
• ·									·	
			1			l				!

Work Order ID February-06-12 7:50:14 A			*798	342*			Page 4
Item ID: D407-667 Revision ID: Item Name: Crosstube Start Date: 06/02/201 Required Date: 20/02/201 Reference:	Fwd 2 Start Qty: 1.00	*1* *1*	Accept	*N900040' Cust Item ID: Customer:	100*	Setup Start Stop	*NS1* *NS2*
Approvals: Process	Plan: Da	ite:	Tooling:	Date:		Run Start	*NR1*
QC:		ite:	_ SPC (Y/N):	Date:	· · · · · · · · · · · · · · · · · · ·	Stop	*NR2*
Sequence ID/ Work Center ID	Operation Description Dwg D407-667-14	15	Set Up/ Run Hours		Plan Accep Code Qty		Reject Insp. Number Stamp
150 *4.5.0*	Crosstubes Chemical Conversion	on .	0.00). 10	2 16
150 HandFXtube Hand Finishing Crosstubes	Мето		0.00			1 12	5-10
					۸		
160	QC3- Inspect Part Finish		0.00		//		
160 QC Quality Control	Мето	٠,	0.00	t	_ w)'	\ \\	83 · 19 (1)
					٨	•	•
170	QC5- Inspect part completeness	to step on W/O	0.00 ·			12	B 19 (1)
QC	Memo		0.00		- W	1 10	~~ 1~~()

Memo

Quality Control

Dail Ac	vopace	Llu									
W/O:			WORK ORDER CHANGES								
DATE	STEP	PRO	PROCEDURE CHANGE					Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	
							-				
Part No	:	PAR #:	Fault Categ	ory:	NCR:	Yes N	o DQ	A:	Date:		
	Re	esolution:	Disposition	ı:	_ QA: N	/C Clos	sed:		Date:		
NCR:			WORK ORDE	R NON-CONFORM	ANCE (NCR)					
DATE	STEP	Description of NC Section A	Initial Chief Eng	Corrective Action Section Description Chief Eng		Sign & Date	Verific Secti		Approval Chief Eng	Approval QC Inspector	
		,									
		,									

Work Order ID 79842 February-06-12 7:50:14 AM				*79842*							Page 5
Item ID: Revision ID: Item Name:	D407-667-10			Accept	*N900	040	100)*	Setup Star Sto	I /	S1*
Start Date: Required Date Reference:	06/02/2012 e: 20/02/2012	Start Qty: 1.00 Req'd Qty: 1.00	*1* *1*		Cust Item :						
Approvals:		n:	Date:	Tooling: SPC (Y/N):	<u> </u>	ate:]	Run Star Stop	1/	R1* R2*
Sequence ID/ Work Center I	D	Operation Description		Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
*180 *180* Outsource2 Outsource process	- NDT	Memo OUTSIDE S Liquid Penet Issue P/O: 1 Level 2 Attack	ERVICE -CROSSTUBI rant Inspection as per C ムろう LPI as per AS	0.00 0.00 ES SI 038 Or STM 1417 to work order				<u>Co</u>	L 12	103/	2 <u>60</u>
100 Packaging Packaging		Packaging Memo Inspect for tr Ensure copy	ansit damage of NDT results attached	0.00 0.00 I to work order.					lo,	 s/3/5	66(1

200
QC
Quality Control

200

Memo

QC5- Inspect part completeness to step on W/O

0.00

Inspect for damage & ensure results are as per Dwg D206-667-145

					4				
		W	ORK ORDER CHANG	ES					, ,
STEP	PRO	PROCEDURE CHANGE				Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
									-
	•								
	PAR #:	Fault Cate	egory:	NCR	: Yes N	lo DQ	A:	Date:	
R	esolution:	Disposition	on:	QA:	N/C Cio	sed:		Date:	
		WORK ORD	ER NON-CONFORM	ANCE	(NCR)				
CTED	Description of NC			tion B	0:	Verification		Approval	Approval
SIEP	Section A	Initial Chief Eng	Action Description Chief Eng		Date	Secti	on C	Chief Eng	QC Inspector
			•						
		:PAR #: Resolution: Description of NC	PAR #: Fault Cate Resolution: Disposition WORK ORD STEP Description of NC Section A Initial	PAR #: Fault Category: Resolution: Disposition: WORK ORDER NON-CONFORM STEP Description of NC Section A Chief Eng Chief Eng Chief Eng Chief Eng	PAR #:	STEP PROCEDURE CHANGE By PROCEDURE CHANGE PAR #: Fault Category: NCR: Yes N Resolution: Disposition: QA: N/C Clos WORK ORDER NON-CONFORMANCE (NCR) STEP Description of NC	STEP PROCEDURE CHANGE By Date PAR #: Fault Category: NCR: Yes No DQ/ Resolution: Disposition: QA: N/C Closed: WORK ORDER NON-CONFORMANCE (NCR) STEP Description of NC	STEP PROCEDURE CHANGE By Date Qty PAR #: Fault Category: NCR: Yes No DQA: Resolution: Disposition: QA: N/C Closed: WORK ORDER NON-CONFORMANCE (NCR) STEP Description of NC	STEP PROCEDURE CHANGE By Date Qty Approval Chief Eng Prod Mgr Prod

Work Order ID 79842 February-06-12 7:50:14 AM				*798	342*							Page 6
Item ID: Revision ID: Item Name:	D407-667-105 Crosstube Fwd 06/02/2012			Accept	*N900	040	100)*	Setup S	tart Stop	*N: *N:	S1* S2*
Start Date: Required Date: Reference:			*1* *1*		Cust Item I Customer:	D:						
Approvals:	Process Pla	ın:	Date:	Tooling:	D:	ate:				tart	*NI	R1*
	QC:		Date:	SPC (Y/N):	Da	ate:			S	top	*NI	R2*
Sequence ID/ Work Center II 210)	Operation Description		Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	t Reject Qty		Reject Iumber	Insp. Stamp
210 SprayPaint Spray Painting		SprayPaint Memo 1-Prime inside	de and outside crosstube a	0.00				_A&	[5	<u>-</u>	3 -	28
		2-Paint outsi PRIME: 12 Start Time:_ Fininsh Time PAINT: 12 Start Time:_ Finish Time:	7:00 : 7:30 0 985 1: 37	mron as per QSI 005 4.2								
* 22 0 * 22 0* OC		QC14- Inspect Spray Pair	ıt	0.00	101							

Then, Wrap in plastic bag to protect from scratches

Quality Control

					0=0					,					
W/O:		WORK ORDER CHANGES													
DATE	STEP	PRO	OCEDURE CHA	NGE	E	Ву	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector					
										•					
Part No		PAR #:	Fault Cate	gory:	NCR:	Yes N	lo DQ	4:	_ Date: _						
	Res	solution:	Dispositio	n:	QA: N	/C Clo	sed:	- 1/-	Date: _						
NCR:			WORK ORD	ER NON-CONFORM	MANCE (NCR)									
		Description of NC			ection B		Verification		Approval	Approval					
DATE	STEP	Section A	Initial Chief Eng	Action Description Chief Eng	n S	Sign & Date	Secti		Chief Eng	QC Inspector					
			**							1					

Work Orde February-06-12				*798	342*							Page 7
Item ID: Revision ID: Item Name:	D407-667-10			Accept	*N900	040	100)*	Setup S	tart top	*N:	S1* S2*
Start Date: Required Date: Reference:	06/02/2012 20/02/2012	Start Qty: 1.00 Req'd Qty: 1.00	*1* *1*		Cust Item 1 Customer:	ID:					·	
Approvals:		n:		Tooling: SPC (Y/N):		ate:		1		tart top	*NI *NI	R1* R2*
Sequence ID/ Work Center II)	Operation Description		Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty		eject umber	Insp. Stamp
*230 *230* Crosstubes		Crosstubes Memo		0.00				AR_	12	-	4	<u> </u>
Crosstubes		2-Install supp A/R Pros 3- Torque bo	a with 4105S wash 'n' wi ports with Proseal 890 pe eal 890 Batch:	r DSI9565 and QSI 015								Λ
²⁴⁰ * 24 0*		QC5- Inspect part comple	eteness to step on W/O	0.00			(Ma
QC		Memo		0.00			'					12:06

.

Memo

Quality Control

Dart Aerospa	ce Ltd	
--------------	--------	--

Dail Ac	ospace	; Llu											
W/O:			WORK ORDER CHANGES										
DATE	STEP	PRO	OCEDURE CHAN	IGE	Ву	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector				
Part No	:	PAR #:	Fault Categ	jory:	_ NCR: Yes	No DQ	A:	Date: _					
	R	esolution:	Disposition	ı:	_ QA: N/C CI	osed:		Date: _					
NCR:			WORK ORDE	R NON-CONFORM	ANCE (NCF	?)							
		Description of NC	L		ion B	Verifi	cation	Approval	Approval				
DATE	STEP	Section A	initial Chief Eng	Action Description Chief Eng	Sign 8 Date	k Sect	ion C	Chief Eng	QC Inspector				
									c - - - - -				
									_				

Location:_ PPP Rev:

-411710	oopaoo					,				
W/O:			V	VORK ORDER CHAN	· · · · · · · · · · · · · · · · · · ·				, ,	
DATE	STEP	PROC	CEDURE CH	IANGE		Ву	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
Part No		PAR_#:	_ Fault Ca	tegory:	NCF	R: Yes N	o DQ	A :	Date:	
	Re	esolution:	Disposit	ion:	QA:	N/C Clos	sed:		Date:	
NCR:		W	ORK OR	Corrective Action	MANCE	(NCR)				
DATE	STEP	Description of NC	Initial	Section B	Sign &	Verific		Approval	Approval	
	0,2,	Section A	Chief Eng	Action Descriptio	/11	Date	Section	on C	Chief Eng	QC Inspector
								:		
,										
						• •				
İ	1						1			}

Work Orde February-06-12			*79842*									Page 9
Item ID: Revision ID: Item Name:	D407-667-10			Accept	*N900	040	100)*	Setup	Start Stop	171	S1* S2*
Start Date: Required Date: Reference:	06/02/2012 20/02/2012	Start Qty: 1.00 Req'd Qty: 1.00	*1* *1*		Cust Item I Customer:	D:					1 0	
Approvals:	Process Pla	ın:	Date:	Tooling:	D:	ate:	_		Run	Start	*N	R1*
	QC:		Date:	SPC (Y/N):	Da	ate:				Stop	*N	R2*
Sequence ID/ Work Center II)	Operation Description		Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Rej Qty	-	Reject Number	Insp. Stamp
*280 *280* QC Quality Control		QC21- Final Inspection Memo	- Work Order Release	0.00						12/1	4/12	

R120412

- u	Opace					,								
W/O:			WORK ORDER CHANGES											
DATE	STEP	PRO	OCEDURE CHAI	NGE		Ву	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector				
					•									
Part No	:	PAR #:	Fault Cate	gory:	_ NC	R: Yes	No DC)A:	_ Date: _					
	R	esolution:	Dispositio	າ:	_ QA	N/C C	losed:		Date: _					
NCR:			WORK ORDI	ER NON-CONFORMA	ANCE	E (NCI	₹)							
		Description of NC			ion B		Verif	cation	Approval	Approval				
DATE	STEP	Section A	Initial Chief Eng	Action Description Chief Eng		Sign of Date		tion C	Chief Eng	QC Inspector				
4														
					,									
						·								

Picklist Print

· February-06-12 7:50:18 AM

Work Order ID: 79842

79842

Parent Item:

D407-667-105

Parent Item Name: Crosstube Fwd

D407-667-105

Start Date: 06/02/2012

Required Date: 20/02/2012

Page 1

Start Qty: 1.00

Required Qty: 1.00

Comments:

IPP Rev:F 05.09.01Add holes for compatibility with Bell SkidtubesKJ/JLM

IPP Rev:G 08-05-16 chg QC6 to QC15 DD verified by:EC

IPP Rev:H 08-06-03 update as per DSI9415 (ECN1198) DD verified by:ec IPP Rev:1 08-07-14 add (scribe inside of tube) seq.6 DD verified by:EC IPP Rev:J 08-07-28 update as per (par 08-013) DD verified by:EC IPP Rev K 09.01.06 ECN 08-562 EC verified by:DD IPP REV:L

11.08.05 PER ECN 11-615 DD VERF:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per I	Kit Total Qty	~ "	Date Status ssued
D407-667-105TRN		Manufactured	No		90 - 11	110	Each	0.0000	1		MO	12/3/15
D407-667 Crosstube Turning Detail	7-105TF	SN		(30 711				**			
D2873-043		Manufactured	No			230	Each	22.0000	2	2		
*D2873-04	L 3 *								**		AS	15 4/ 5
Nut Plate Assembly	,				80:	าลร				<u>(67)</u>	#3	12-4-2
				<u>Locatio</u>		Loc_	<u>Qty</u>	Loc Code		<u>③</u>		
				LG052			22				_	
					72644		2				<u>—</u> .	
D2873-045			NI.		75010	220	20			•	_	
	l marile	Manufactured	No			230	Each	15.0000	2	2	. 4	
D2873-04	.5 []								**		Al la	2-4-11
Nut Plate Assembly					81425	_				2	•	
				Location	<u>n</u>	Loc		Loc Code				
				LG052	74985		15 15					
D2891-1		Manufactured	No		74963	230	Each	28.0000	2	2	_	
D2891-1		Manaractarea				250	Duvii	20.0000	**	2	10	46.5
2.25 Support					Para -				^ ^		AS 12	-4-2
2.20 Support				Location	80160	Loc (Otv	Loc Code		3		
				LG052	•	<u> Loc v</u>	28	Lot Code				
				LGUJZ	72822		8					

75176

W/O:	Торио		W	ORK ORDER CH	ANGES				
DATE	STEP	PRO	OCEDURE CHA			Ву	Date C	Approval Chief Eng / Prod Mgr	Approval QC Inspector
<u> </u>								Prod Wigi	
	ļ								
					:				
						!			
Part No	•	PAR #:	Fault Cate	egory:	NCI	R: Yes N	o DQA:_	Date: _	
	R	esolution:						Date: _	
NCR:		\	WORK ORD	ER NON-CONFO	RMANCE	(NCR)			
DATE	STEP	Description of NC		Corrective Action	Section B	Ciam 0	Verificati		Approval
DAIL	SIEP	Section A	Initial Chief Eng	Action Descrip	otion	Sign & Date	Section C	Chief Eng	QC Inspector
	i								
					1110				
				·					
				,					
NOTE: 0	oto 9 imiai	al all antrice							
NOTE: U	ate & Initi	al all entries							

February-06-12 7:50:18 AM									Page 2
Work Order ID: 79842 Parent Item: D407-667-105 Parent Item Name: Crosstube Fwd			9842* 9407-667-1	ი5*		S.	tart Date: 0	06/02/2012	D 1 D 20/02/2012
Tarent Real France							start Oate: (Start Qty: 1		Required Date: 20/02/2012 Required Qty: 1.00
D3595-063-395	Manufactured	No		230	Each	50.0000	4	4	
D3595-063-395							**		Af 12-4-2
RUBBER CUSHION			87353					A)	730 150 0 0
			Location	<u>L</u> e	oc Qty	Loc Code			
			MAT052 74300		50 50				_
MS20601-AD4W10	Purchased	No	74300	230	Each	137.0000	14	14	_
*MS20601-AD4W							**	14	Ad 12-4-11
RIVET	117		120676					(14)	Ma 10-4-11
			Location	<u>La</u>	c Qty	Loc Code			
			LG051		137				_
			118675		37				_
MS21920-20	Purchased	No	119386	230	100 Each	62.0000	4		-
	Purchased	110		230	Eacii	02.0000	**	4	Aθ
M\$21920-20 Clamp (per MIL-DTL-8783C)							^^		Al 12-4-2
Clamp (per ivite bite-orose)			120676 Location	Lo	c Qty	Loc Code		Œ)	,
			LG050		62	200 0040			
			116799		10				
			119386		2				_
			120475		50		-		-
AN5-10A Bolt	Purchased	No		250	Each	416.0000	**	10/25	770 Ce/3/9
		÷	Location	Lo	e Qty	Loc Code			
			ST337		416				_
			118191		80				_
			119547		236				_
			119981		100				-

W/O:	•		W	ORK ORDER CHANG	ES				* .
DATE	STEP	PRO	OCEDURE CHA	NGE	Ву	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
				**************************************				Prod Wigr	•
Part No	:	PAR #:	Fault Cate	gory:	_ NCR: Yes	No DQA	4 :	_ Date: _	
	R	esolution:	Dispositio	n:	_ QA: N/C CI	osed:		Date: _	
NCR:			WORK ORD	ER NON-CONFORMA	NCE (NCF	1)			
		Description of NC		Corrective Action Section		Verific	ation	Approval	Approval
DATE	STEP	Description of NC Section A	Initial Chief Eng	Action Description Chief Eng	Sign 8 Date	Section		Chief Eng	QC Inspector
									:
									
		•							
								·	
							***		_

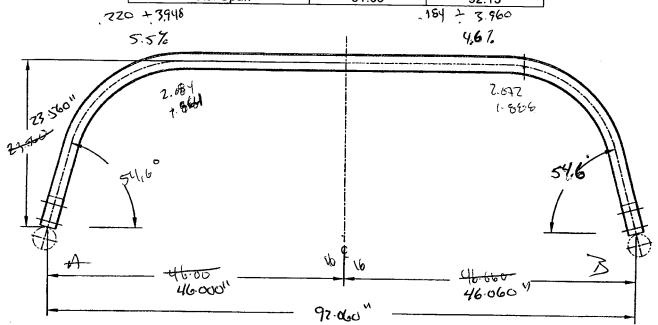
February-06-12 7:50:19 AM		· · · · · · · · · · · · · · · · · · ·	Shop	Packet Print				Page 3
			5				, , , , ~ , _	
			119109		1500		119/09	
			117611 118179		42 274			
			116548		43			
			116105		5			* }
			ST300		1864			
			Location	Lo	oc Oty	Loc Code		•
Nut								- Co 194/10
S*MS21042L5*						**	k	(O)111/10
MS21042L5	Purchased	No		250	Each	1,864.000	4 4	
Washer							4	
AN960.ID516						<i>^,</i> ★:	k	7118614
AN960JD516 NAS1149D0563.	Purchased	No		250	Each	0.0000	_18. 18	
CANOCOIDEIC I NACULADOSCO			120423		75		, was a second	刻)
			119862		50			\mathcal{A}
			119328		100		119328	<u> </u>
			118983		25			
			118628		258 8			
			ST339	L	oc Qty	Loc Code		
DUIL			<u>Location</u>		oo Ota	L C3-		
\$AN5-32A*						*		
- <i>-</i>	ruichaseu	110		230	Each		4 4	
AN5-32A	Purchased	No	120423	250	75 Each	258.0000 -	12072	
			118706		19		10 5 (1)	2
			117514		7			-
			ST339		101			-
			Location	<u>L</u>	oc Qty	Loc Code		<u> </u>
BOLT								
≲* AN5-30A*							* -	<i>(1)</i>
AN5-30A	Purchased	No		250	Each	101.0000	44	a h
			χ.			Star	t Qty: 1.00	Required Qty: 1.00
Parent Item Name: Crosstube Fwd						Start	Date: 06/02/2012	Required Date: 20/02/2012
Parent Item: D407-667-105		*D	407-667-	105*			•	•
Work Order ID: 79842		*7	9842*				1	
						· ·		
· "February-06-12 7:50:19 AM								Page 3
Picklist Print								D2

Page 3

	1								* 1 4	
W/O:			wo	RK ORDER CHANG	ES				• •	
DATE	STEP	PROCI	EDURE CHAI	NGE	By Date Qty Chief Er			Approval Chief Eng / Prod Mgr	Approval QC Inspector	
									•	
•								.3 ·	The same of the sa	
						- · ·				
Part No	•	PAR #:	Fault Categ	jory:	NCR: Yes	No DQ	A:	_ Date: _	·	
			Disposition: Q							
NCR:				R NON-CONFORMA			· <u></u>	·		
	OTED	Description of NC		Corrective Action Section		Verific	cation	Approval	Approval	
DATE	STEP Description of NC Section A	Section A	Initial Chief Eng	Action Description Chief Eng	Sign & Date		Section C	on C	Chief Eng	
								ŧ		
					·.			·		
									_	
•										
	1		1		ı	ı		l .	1	

DART AEROSPACE LTD	Work Order:	79842
Description: Crosstube High Fwd (407)	Part Number:	D407-667-105
Inspection Dwg: D407-667-145 Rev: C		Page 1 of 1

Required Dimension	Min	Max
Height	23.41	23.67
1/2 Span	45.81	46.07
Angle	54	56
Total Span	91.63	92.13



Sino A = 5 - 70 (October () 16 Parison	
1 1 1 C1301 (W 16 14 10)	
Sinc B = 4.6% crushy (16 Daster.	

QC15 Inspection	[8]
Date	17/03/15

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	7.pp.oteu
В	09.11.12	Dimensions updated per Dwg Rev C	KJ KJ	2
				

W/O:			V	ORK ORDER CHANG	GES				
DATE	STEP	PRO	OCEDURE CH	ANGE	Ву	Date Q	Approval Chief Eng / Prod Mgr	Approval QC inspector	
	:								
Part No	:	PAR #:	Fault Ca	_ Fault Category: NC		No DQA: _	Date: _		
	R	esolution:	Disposit	Disposition: QA: N/C Close			sed: Date:		
NCR:	×		WORK OR	DER NON-CONFORM	ANCE (NCF	R)			
DATE 0750		Description of NC	Description of NC Corrective Action			Verificati	on Approval	Approval	
DATE	STEP	Section A	Initial Chief Eng	Action Description Chief Eng	Sign 8 Date			QC Inspector	
	1 1 1 1								
				•					
*			:						
. ,									

NOTE: Date & initial all entries

^{• .}H:\fFORMS\Quality Assurance\approved QA\NCRWO RevE

Item	Qty -145	Part Number	Description
1	Х	D407-667-145	CROSSTUBE ASSEMBLY (407 HIGH FWD)
2	1	D6010-115	CROSSTUBE
3	2	D2873-043	NUT PLATE
4	2	D2873-045	NUT PLATE
5	2	D2891-1	SUPPORT
6	4	D3595-063-395	RUBBER CUSHION
7	4	MS21920-20	CLAMP (OR MS21920-21)
8	14	MS20601AD4W10	RIVET (OR NAS9302B-4-10)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299- 947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

D

- 1) MATERIAL: MANUFACTURED FROM D60 10-115 FINISHED LENGTH = 113,20±0,020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
- PAINT OUTSIDE PER DART QSI 005 4.2 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- IDENTIFICATION: SCRIBE DART PART NUMBER "D407-667-145" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- WEIGHT: 17.8 lbs
- PART IS SYMMETRIC ABOUT CENTERLINE.
- RUN CUTTER OFF PART WHERE INDICATED, BLEND OUT EDGE LONGITUDINALLY. TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 6 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-20 CLAMPS (OR -21) WITH D3595-063-395 RUBBER CUSHIONS TO SECURE THE D2891-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS ARE LOCATED ON CROSSTUBE SUPPORTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

D

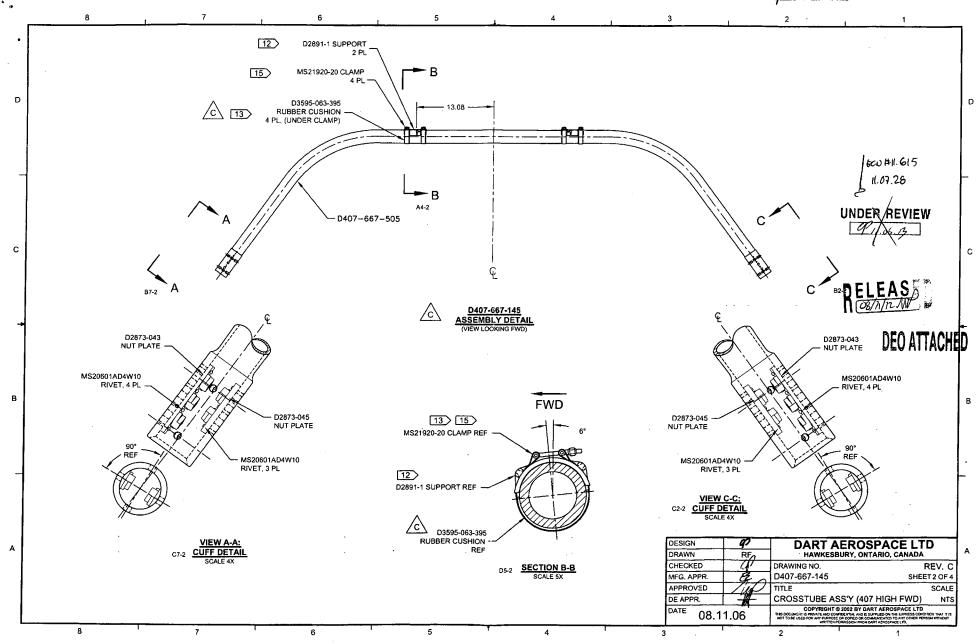
12/02/06

ECN#11-615

С	REORG TO CUP D3595-C REMOV D2-3); F	ANIZED VIEW: RRENT STAND: 063-395 WAS D PED REF. 7 ADI RELOCATED FL TURNING DE	OTES/PART LIST (ZN D7-1); SADD REFORMATTED DRAWING SADDS. 12856-400-694 (ZN D6-2 & A5-2); D TOLERANCES (ZN C6-3, C4-3, AG #6 (ZN A8-3) PER NCR 210; TAIL & UPDATED TOLERANCE TO	RF	08.11.06		
В		DLES AND NUT HT/AA SKUDTI	PLATES FOR COMPATABILITY JBES	PH	05.07.26		
Α	NEW IS	SSUE		CP	02.05.08		
REV.			DESCRIPTION	BY	DATE		
DESIGN P			DART AEROSP	ACE	LTD		
DRAWN		RF ₂	HAWKESBURY, ONTARIO, CANADA				
CHECKE	D	W	DRAWING NO.	NG NO. REV.			
MFG. AF	PR.	Era	D407-667-145 SHEET t OF				
APPRO\	/ED	111	TITLE SCALE				
DE APPE	₹.	-41-	CROSSTUBE ASS'Y (407 H	GH FW	/D) NTS		
DATE	08.1	1.06	COPYRIGHT © 2002 BY DART AEROSPACE LTD THIS COCUMENT IS PRIVATE ARE CONFIDENTIAL AND IS SHYULED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PERPOSS OR COPISO OR COMMANDATED TO ANY OTHER PERSON WITHOUT WESTERN PREMIABOR FOR ON DART ARROPMED TO.				

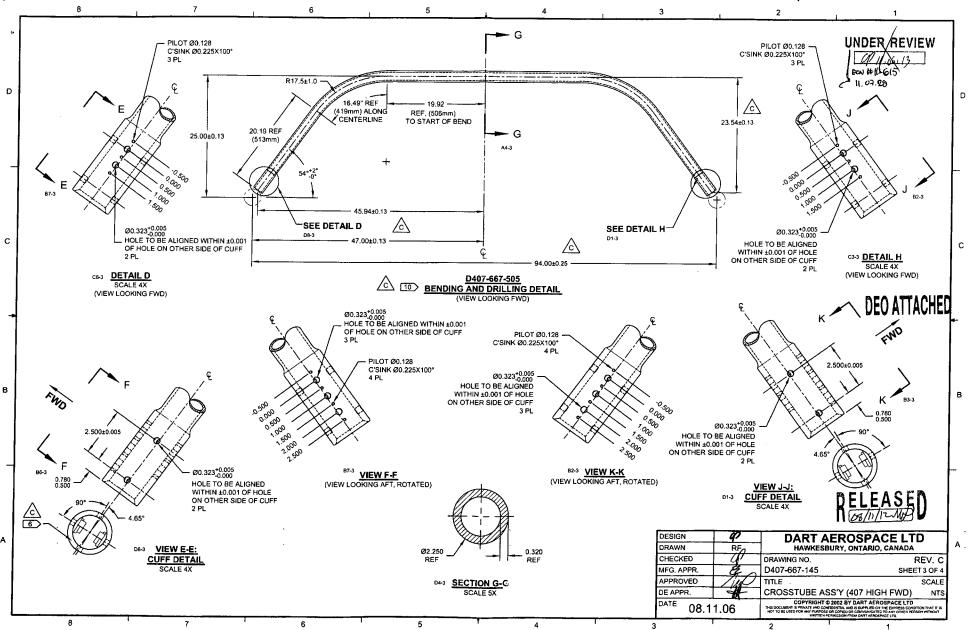
Dart Aerospace L	.td
------------------	-----

Dair Aci	Ospace	Elu									
W/O:			WORK ORDER CHANGES								
DATE STEP		Pl	PROCEDURE CHANGE By Date Qty Chief Er					Approva Chief Eng Prod Mg	Approvai		
			•								
··											
						ļ					
Part No	:	PAR #:	Fault Ca	tegory:	NCI	R: Yes N	lo DQA:	Date:			
				Disposition: Q							
NCR:			WORK OR	DER NON-CONF	ORMANCE	(NCR)					
		Description of NC		Corrective Action	Section B		Verificati	ion Approv	al Approval		
DATE	STEP	Section A	Initial Chief Eng	Action Descr Chief Eng	iption	Sign & Date	Section (g QC Inspector		
							E				
		·									
	<u> </u>			Alaman Al							
-											
			·								



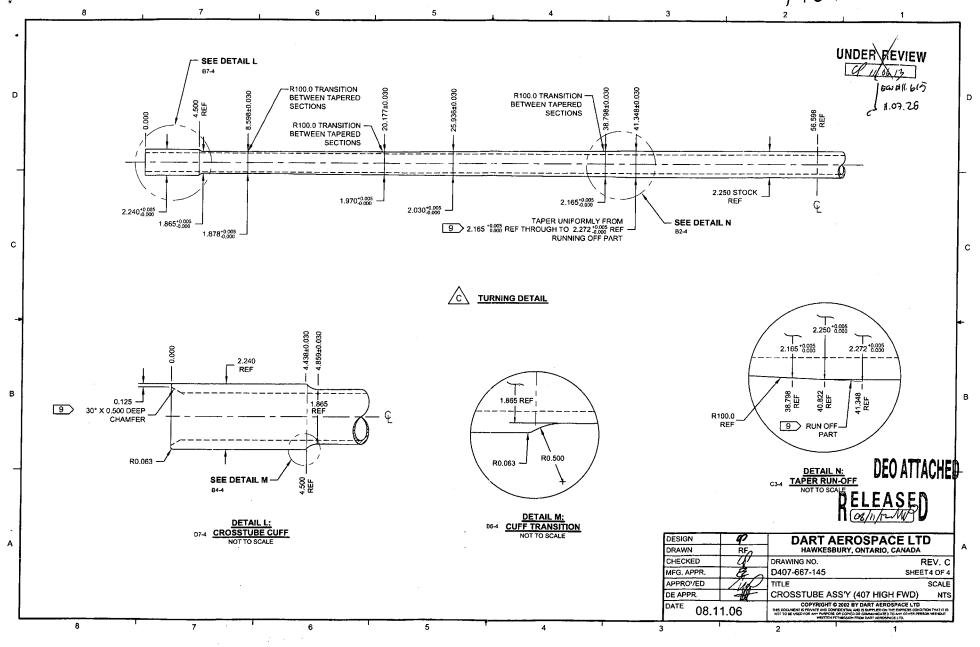
Dart Aerospace	Ltd	
----------------	-----	--

W/O:			WO	RK ORDER CHANG	ES			-		, ,
DATE	STEP	PR	OCEDURE CHAP	IGE		Ву	Date	Qty	Approval Chief Eng / Prod Mgr	Approvál QC Inspector
Part No	:	PAR #:	Fault Categ	ory:	_ NCF	R: Yes	No DQ	A:	Date: _	
Resolution:			Disposition	II	_ QA:	N/C CI	osed:		Date: _	
NCR:			WORK ORDE	R NON-CONFORMA	ANCE	(NCF	1)			
		Description of NC			ion B			cation	Approval	Approval
DATE	STEP	Section A	Initial Chief Eng	Action Description Chief Eng		Sign 8 Date		Section C	Chief Eng	QC Inspector
					v ·					
						 				



Dart Aerospace Ltd	Dart	Aer	ospa	ıce	Ltd
--------------------	------	-----	------	-----	-----

W/O:			WO	RK ORDER CHAN	GES					
DATE	STEP	PRO	OCEDURE CHAN	IGE		Ву	Date	Qty	Approval Chief Eng / Prod Mgr	Approvál QC Inspector
	-									•
							h. 20			
Part No	:	PAR #:	Fault Categ	ory:	NCF	l: Yes I	No DQ	A:	Date:	
	R	esolution:	Disposition	:	QA:	N/C Clo	sed:		Date: _	
NCR:			WORK ORDE	R NON-CONFORM	IANCE	(NCR)			
DATE	STEP	Description of NC					Verification		Approval	Approval
DAIL	SILI	SIEP Section A	Initial Chief Eng	Action Description Chief Eng		Date	Secti	on C	Chief Eng	QC Inspector
						,				
										1
					-					



Dart	Δer	osn	ace	l td
Dait	TCI	υsμ	ace	LIU

W/O:			WO	RK ORDER CHANG	SES							
DATE	STEP	PR	OCEDURE CHAP	RE CHANGE By D		Date	e Qty	Approval Chief Eng / Prod Mgr	Approvál QC Inspector			
									!			
									3.			
Part No	:	PAR #:	Fault Categ	jory:	_ NCR: Ye	s No	DQA:	Date:				
	R	esolution:	Disposition	1:	QA: N/C	Closed:		Date: _				
NCR:			WORK ORDER NON-CONFORMANCE (NCR)									
DATE	STEP	Description of NC			tion B		erification	Approval	Approval			
DATE	SIEF	Section A	Initial Chief Eng	Action Description Chief Eng	Sig Da		Section C	Chief Eng	QC Inspector			

i					i				l			

79842

DRAWING NO.	TITLE	REV. C	DART AEROSPACE LTD	D.E.O. NO.	SHEET NO.	SCALE
D407-667-145	CROSSTUBE ASS'Y (40	7 HIGH FWD)	ENGINEERING ORDER	D407-667-145-C-1	SHEET 1 OF 1	NTS
DRAWN 9	CHECKED	/\S	MFG. APPR.	APPROVED (ND)	DE APPR.	
DATE 11.07.	15 DATE //	,07.22	DATE 11:07:22	DATE 11/07/22	DATE 11.07.21	
			· · · · · · · · · · · · · · · · · · ·			

PURPOSE:

REPLACE MAGNOBOND WITH PROSEAL

CHANGE:

is:

ltem	Qty -145	Part Number	Description
9	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

WAS:

9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023
1			ADHESIVE (TEXTRON/BELL SPEC. 299-947-100,
			TYPE II, CLASS 2 ADHESIVE)

NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 12) TO INSTALL D2891-1 SUPPORT: ABRADE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.

WAS:

- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.



COPYRIGHT © 2011 BY DART AEROSPACE LTD

INIS DOCUMENT IS PRIVATE AND CONTIDENTAL AND IS SUPPLIED ON THE SURPRES CONDITION THAT IT IN

NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT

WEST THAT PERSONS ON PROMINING ANY OTHER PERSON WITHOUT

WEST THAT PERSONS ON PROMINING ANY OTHER PERSON WITHOUT

WEST THAT PERSONS ON PROMINING ANY OTHER PERSON OF PERSON ANY OTHER PERSON WITHOUT

WEST THAT PERSONS ON PERSON PAGE ANY OTHER PERSON OF PERSON PAGE LTD.

Dart	Aeros	pace	Ltd
-------------	--------------	------	-----

W/O:		WORK ORDE	R CHANGES					
DATE	STEP	PROCEDURE CHANGE	i de la companya de l	Ву	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
	3.2							
	alle			· ·				
	·• '						į	

Part No: _		_ PAR #:	Fault Category:	<u> </u>	NCR: Yes No	DQA:	Date: _	
	Resolution:		Disposition:		QA: N/C Close	d:	Date: _	·

NCR:		W	ORK OR	DER NON-CONFORMANCE	(NCR)	·		
		Description of NC		Corrective Action Section B	Verification	Approval	Approval	
DATE	STEP	Description of NC Section A	Initial Chief Eng	Action Description Chief Eng	Sign & Date	Section C	Chief Eng	QC Inspecto
·								
•			/				,	
		ja.			•			
	A				·	* •	A	
		•.		***				**************************************
					4.50			
	"			À				
			· .	·				

PARTS LIST 5.0

REFERENCE ONLY

5.1 **HIGH GEAR CROSSTUBES**

Item	Qty	Qty	Qty	Qty	(Qty	Qty			
	-101	-201	-103	-203	-105	-205			
	X						D206-667-101	CROSSTUBE INSTALLATION,	
								206A/B HIGH FWD	
		X					D206-667-201	CROSSTUBE INSTALLATION,	
								206A/B HIGH AFT	
			Х				D206-667-103	CROSSTUBE INSTALLATION,	
								206L/L-1/L-3/L-4 HIGH FWD	
				Х			D206-667-203	CROSSTUBE INSTALLATION,	
								206L/L-1/L-3/L-4 HIGH AFT	
					Χ.		D407-667-105	CROSSTUBE INSTALLATION, 407 HIGH FWD	
						X	D407-667-205	CROSSTUBE INSTALLATION, 407 HIGH AFT	
1	_1				_		D206-667-141	CROSSTUBE ASSEMBLY, 206A/B HIGH FWD	
2		1					D206-667-241	CROSSTUBE ASSEMBLY, 206A/B HIGH AFT	
3			1				D206-667-143	CROSSTUBE ASSEMBLY,	
		_						206L/L-1/L-3/L-4 HIGH FWD	
4				1		Ì	D206-667-243	CROSSTUBE ASSEMBLY,	
		_						206L/L-1/L-3/L-4 HIGH AFT	
5					1		D407-667-145	CROSSTUBE ASSEMBLY, 407 HIGH FWD	
6						1	D407-667-245	CROSSTUBE ASSEMBLY, 407 HIGH AFT	
10	*2	*2	*2		*2		D2891-1	SUPPORT	
11				*2			D2892-1	SUPPORT	
12						*1	D2894-1	SUPPORT	
13	*4	*4	*4		*4		D3595-063-395	RUBBER CUSHION	
14				*4			D3595-063-450 RUBBER CUSHION		
15						*2	D3595-075-430 RUBBER CUSHION		
16	*4	*4	*4		*4		MS21920-20 CLAMP		
17	<u> </u>			*4		*4	MS21920-22 CLAMP		
18	L					*2	MS21920-25 CLAMP (OR MS21920-24)		
19	4	4	4	ļ	.4		AN5-32A BOLT		
20	L			4		-4	AN5-34A BOLT		
21	4	4	4	4	4	4	MS21042L5 /	NUT (OR MS21042-5)	
_22	8	8	8	- 8	8	218	NAS1149C0563J~	WASHER (OR AN960JD516)	
23					,	*2	D3190-1 -/ CHAFING SHIELD		
40	*2		*2	*2	*2	*2	D2873-043	NUT PLATE	
41	*2		*2	*2	*2	*2	D2873-045	NUT PLATE	
42		2					D2872-043	NUT PLATE	
43	<u> </u>	2					D2872-045	NUT PLATE	
44	10		10	<u> </u>			AN5-7A	BOLT	
45		10		10	10	~ 10~	AN5-10A	BOLT	
46	4	10	4		4		AN5-30A -	BOLT	
_47				4		14	AN5-32A	BOLT	
48			12			_ ـ	AN970-4	WASHER (OPTIONAL)	
49		6					MS21042L5	NUT (OR MS21042-5)	
50	10	12	10	10	10	1 0	NAS1149C0563J	WASHER (OR AN960JD516)	
60		1		i	l	1	D3039-3	CENTER DRILL (TOOLING, NOT INSTALLED)	

*REFERENCE ONLY. PARTS ARE INCLUDED IN D206-667-141/-143/-241/-243 & D407-667-145/-245 ASSEMBLIES ABOVE

COPYRIGHT © 2001 BY DART AEROSPACE LTD •

THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.

Revision: **D**

Date: 11.05.01

	LIQUID PI	ENETRA	NT TES	T REPORT	P-	12178
ACUREN	ŧ					•
					PAGE	å OF
CLIENT	DANT ACROSTACE	Dat	E	63/73/20	12. TIME	AM DÉ PM D
ATTENTION	LINDA LACELLE	Acu	IREN JOB NO.	128	3-12-0	0072
Address	1270 ABERDEEN ST.	PO/	WO No.	-		
	HANKES BUTY ON	 Wo	RK LOCATION	SAUE,		
		Acc	EPTANCE STD.	ASTA 1417/05/-	ので PEV./DATE	E 2005
PROJECT	F.P. I. QU		5 TuBE	·	 -	
ITEM(S) EXAMINED						
			7)			
JOB DESCRIPTION	ON PROCEDURE NO. LTube R	EV./DATE 7	ZŐ T	ECHNIQUE NO. LT	#2 REV./DAT	E 2008
Part N O.	. SEE KE SULTS			us Accidence	THICKNESS	V.440c.
SCOPE 4 (WET FLAMESCENT	LIQU.		E TRANT.		
46		100 %		ENNAL S	in FAC	
TEST DETAILS	CONTROL OF THE PROPERTY OF THE					
METHOD	FLUORESCENT D VISIBLE	Z	Water Wash	□ Solven	REMOVABLE	☐ Post Emulsified
FAMILY BRAND	MATNAFLUX		ACK LIGHT S/N	6459 @ OUTPUT	> 1000 μ W/cм²	☐ AMBIENT < 2 fc
PENETRANT	ZLG7 MINIMUM DWELL TIME 7570			🕽 FLASHLIGHT 🗀 TROUB	LELIGHT 🚨 OUTP	PUT>100 fc @ SURFACE
PENETRANT REMOV			HER	1.00066	Car Dur	EDATE July 78
DEVELOPER TYPE	MINIMUM DWELL TIME 10 Non Aqueous	Min. Lig Dry	HT METER S/N	1093866		2012
TEST SURFACE	7 1404/140E000					
SURFACE CONDITIO	N □ AS GROUND ☑ AS WELDED	0	MACHINED	☐ SHOT BLASTED	O C	LEAN BARE METAL
SURFACE TEMPERA	TURE 🖸 < - 4°C/ 20°F TO	o 10°C/50°F		. ॻ 10°С/50°F то 52°	C/125°F □ >	52°C/125°F
RESULTS-	(Ø METRIC D IMPERIAL)					-/
Gl.	5776BE8		150	PIND MEA		
12 W.	0, # 78700 V					
1 1	" 78637 V					
1 "	" 8/18/ V	′ ′ [:				
1	" 81480 V					
1 1 "	" 81790 /					
49	79790 1	r				
1	" 79842		617/13	126		
111111111111111111111111111111111111111	" (31791			tage to the second		
13 13 13 13 13 13 13 13 13 13 13 13 13 1	The second secon					
-	· · · · · · · · · · · · · · · · · · ·		The same of the same of			
						-

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions of observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not in greed nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

In performing the services provided. Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

i	Si	c	AI	A	71	ē	0	=	9
ı	200	c	173	\sim	. 6 2	٤.	7	⇇	

CLIENT REPRESENTATIVE	Andrew Sheldon	Alheldon	DTR# 563476
TECHNICIAN (SIGNATURE):	PRINT	SIGNATURE	REPORT
NAME (PRINT):	MILE I HOSTON	0%	REVIEWED BY: NAME INITIALS
	CGSB LEVEL SNT LEVEL CGSB REG. NO COCO 6	CGSB LEVEL SNT LEVEL CGSB REG. NO	1